

Combined cigarette and alcohol cues intensify motivation to continue substance use

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Researchers at the University at Buffalo, The State University of New York have explored the motivational impact of cigarette and alcohol

"cues", with important implications for understanding and treating addiction and relapse. Over time, individuals who drink heavily and smoke cigarettes frequently begin to associate simple stimuli in their environment—such as the sight or smell of a lit cigarette or their favorite drink—with the rewarding effects of the substance.

Exposure to the stimulus elicits responses such as craving, salivation, and substance-seeking behavior that may motivate continued substance use. By measuring these responses (collectively known as "cue reactivity") under controlled conditions, researchers can explore people's motivation for substance use. Although many people use [alcohol](#) and cigarettes together, cue reactivity studies have typically examined alcohol and [smoking](#) cues in isolation—despite the potential for combined cues to elicit stronger motivational responses. In the new study, reported in *Alcoholism: Clinical and Experimental Research*, researchers used a cue reactivity procedure to disentangle the separate and joint effects of alcohol and cigarette cues on substance use motivation.

The study involved 110 adult participants who reported using both cigarettes and alcohol. Each participant completed forty cue reactivity trials involving ten sight and sniff exposures to each of four different cues: a small glass of wine or beer/cider next to an opened bottle of the drink (alcohol cue), a lit cigarette on an ashtray next to an opened pack (smoking cue), the smoking and alcohol cues side-by-side (combined cue), and a small glass of water (neutral cue).

Immediately after each exposure, participants rated their level of craving for cigarettes or alcohol. Additionally, participants could choose to spend money to gain access to the cue(s); each participant was provided with \$16 and could spend between one and forty cents on any given trial, with a larger spending amount increasing the probability that the substance(s) would be made available for consumption. When granted access, participants were permitted to take one cigarette puff and/or one

sip of the beverage.

The results showed that alcohol and smoking cues in isolation enhanced cue-specific craving but not craving for the alternate substance—such that alcohol cues enhanced craving for alcohol but not for smoking, and cigarette cues enhanced craving for smoking but not drinking.

Importantly, however, combined alcohol and smoking cues elicited higher craving (and greater spending) relative to single-substance cues.

All substance cues provoked greater spending than the water cue, and cue-elicited craving reliably predicted higher spending. Consumption after gaining access to the cue also correlated with participants' usual smoking and drinking levels—participants who drank more heavily consumed more alcohol per sip, and those who smoked more heavily took longer puffs on the cigarette.

This is the first study to show that combined alcohol and cigarette cues provoke more powerful craving and drug-seeking responses among people who use both substances. The findings may help explain why quitting is more difficult for people who use multiple [substances](#), and support concurrent treatment for tobacco and alcohol dependence. Additional research on polysubstance cues is warranted and may inform existing theories of and treatments for substance use disorders.

More information: Courtney A. Motschman et al, Combined smoking and alcohol cues: Effects on craving, drug-seeking, and consumption, *Alcoholism: Clinical and Experimental Research* (2021). [DOI: 10.1111/acer.14662](https://doi.org/10.1111/acer.14662)

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